

"Dedicated to Public Service"

# THE RADIATOR



W6RHC  
IRL #8170  
Echolink #322788



<http://www.gearsw6rhc.org>

P.O.Box 508 Chico, CA 95927-0508

Founded: August 13 1939

July, 2015

## Coming Events

### O.A.R.S. GENERAL MEETING

Second Friday, every month, at 7:00 p.m., at St. Paul's Church Parrish Hall, 1430 Pine St., Oroville

G.A.R.S. Second Wednesday, each month, General Meeting, Lutheran Church Hall, Artois; 7:00

G.E.A.R.S General Meeting, third Friday each month, at Butte County Search and Rescue Building, Chico. Doors open at 6:00 p.m.

Butte A.R.E.S. MEET: fourth Friday, monthly, at Butte County Search and Rescue Building.

### FCC EXAMS - GEARS VEC

First Sunday of every even numbered month.

At the Butte County Search and Rescue Building. Written test at 2:00 p.m. For information or pre-registration call Tom Rider -W6JS; 530-893-9211

### Club Events:

News and items of interest  
GEARS Calendar...all inside.

Website: [www.gearsw6rhc.org](http://www.gearsw6rhc.org)



Picture courtesy EVARC

## The Prez' Says:

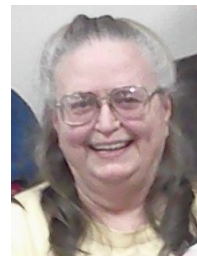
Time to think about our nation's birthday. Hope all you proud Americans are going to celebrate our great country. I may not go anywhere or do anything special, but I know I will consider the changes that have happened to our country in just my lifetime. Things sure go fast when you're not paying attention.

Field Day was a modest success. I spent most of Saturday in the eye emergency room. Nothing critical but it scared me. The inert oil put in my left eye to help the healing process has been left there too long and has collected moisture from surrounding tissue. When you mix oil and water you get a milky suspension and that's what I woke up to on Saturday morning. To say the least, it freaked me out. Got it checked out and back home to collect all the food for Saturday night's BBQ. Made it to Platt Mountain with enough time to spare to borrow a radio's use from Robert Lasso to do my California Traffic Net roll call and move our Field Day traffic. And I managed to get home just before dark since my night vision sucks until the next surgery on July 10. I'll keep everyone in the loop about how the eye is progressing.

July 26 is the volunteer Appreciation party hosted by Chico Velo for all of us who worked the Wildflower. All kinds of prizes, food and drink and a fun get together. This year it will be held at the Chico Women's Club. I will have a bulletin out this week for you to RSVP to Chico Velo.

The Buddypole project made great strides, except for those of us who forgot our parts. Tom wants to hold another session. He has found the plans to add more bands to the home-made antenna. I want to get my system caught up and then make the additions. I'll let everyone know when this will happen.  
Continued page 3

Anna KG6ZOA



**Board of Directors Meeting:  
June 19, 2015**

**ATTENDANCE** All officers present.

**MEMBERSHIP APPLICATIONS:**  
None

**OLD BUSINESS:**

**Bills for consideration:**  
Steven renewed our domain name for \$62.55.

**Pep Boys** donated \$200 worth of items for the club. They request our tax status number.

**Buddypole expenses.**

**NEW BUSINESS:**

**ADJOURNMENT:** 18:42 hr.

**Dale Anderson,**  
Secretary



**MINUTES OF GENERAL MEETING for Jun 19 2015**

**PROGRAM:** Buddy pole construction Part Two.

**Radiograms for Field Day.**

**ATTENDANCE:** All officers present.

**ANNOUNCEMENT:**

**GARS** is having a raffle for Steak Bake this year, it is an ANYTONE VHF/UHF HT. Tickets are \$5 for one and \$20 for 5.

**VEC:** None.

**MINUTES:** Approved the minutes from May meeting.

**TREASURER:**

**\$658.84**  
Treasures report approved.

**OLD BUSINESS:**

**Johnny on the Spot** will deliver to the Platt Mt site for Field Day on Friday, the cost is \$126.50.

**Anna** will bring food for Saturday BBQ on Saturday morning. Please remember to bring your chairs. We will have tables.

**NEW BUSINESS:**

The next month Program will be Software Defined Radio and JT65 digital radio.

**ADJOURNMENT:** 19:39 hr.  
**Dale Anderson,**

## PREZ SAYS, continued

We have several suggestions for future programs I'll see who is available for the July meeting. And just an early reminder---The September Steak Bake is hosted this year by the GARS club. They are selling chances for a tri-band radio 2M/220/40 Anytone. Tickets are \$5 each or 5 for \$20. Contact any GARS member.

Watch for Field Day pictures. I know Rick Hubbard had a camera and was clicking. I'm going to close so this gets to Dorothy so she can send everyone their own personal copy So until the next bulletin, enjoy the summer, avoid sunburn and remember to disconnect if you're going to be gone for any time. Thunderstorms pop up at any instant and one close strike can ruin your station.

Anna KG6ZOA

GEARS -- Treasurer's Report  
For the Period 20150101 - 20150618 (Unaudited)

		Available Balance as of 20141231	\$ 2107.76
<b>INCOME</b>	<b>Category</b>	<b>Amount</b>	
	Auction	\$ 318.00	
	Dues	\$ 85.00	
	Raffle	\$ 102.00	
	Repeater-Donations	\$ 165.15	
	Unknown	\$ 81.00	
		<b>Total Income</b>	<b>\$ 751.15</b>
<b>EXPENSE</b>	<b>Category</b>	<b>Amount</b>	
	Telephony	\$ -206.69	
	Bank Fee	\$ -139.69	
	Liability	\$ -320.00	
	Postage and Delivery	\$ -97.50	
	MISC Fees	\$ -20.00	
	Repeater Service	\$ -100.00	
	Technology	\$ -228.00	
	Electric	\$ -88.19	
		<b>Total Expenses</b>	<b>\$ 1200.07</b>
		Computed Subtotal	\$ 1658.84
		Bank Balance 20150618	\$ 1658.84
		Difference (Should be \$0)	\$ -
		LESS: ARES Funds-on-Deposit	\$ 1000.00
		Available Balance as of 20150618	\$ 658.84

Treasurers Report for Jan 01, 2015 to June 18, 2015  
Submitted by Treasurer Rick Hubbard KI6VOS

***For Sale Items***

**Hendricks QRP Kit** Chuck Alldrin, KN6JS  
[callldrin@gmail.com](mailto:callldrin@gmail.com)

**Dentron MLA 2500 Amp.** Don,  
N6ANN [Don@Bantum.net](mailto:Don@Bantum.net)

**Astron RS-35M** Stephen, W6AKF  
[w6akf@arrl.net](mailto:w6akf@arrl.net)

**Icom IC-V82 2 Meter HT**

Purchased in 2006. Excellent condition.  
With Desktop Charger (BC-146)  
BC-147A 12 DC Volt wall wart power supply.  
Manual, RT Software Disk and USB-29A cable.  
\$100.00  
Stephen, W6AKF 873-4032



Caps embroi-  
dered with your  
name and your  
call sign may be  
ordered by con-  
tacting WA6ZRT  
-Gene Telephone  
#530 -345-3515

**VEC TESTING**  
**2:00 p.m.**  
**August 2, 2015**  
**October 4, 2015**  
**December 6, 2016**

**AT BUTTE COUNTY  
SEARCH & RESCUE  
BUILDING**

**All Classes**  
**Technician, General and**  
**Extra.**

**Contact:**  
**Tom Rider-W6JS**  
**530-893-9211**  
**[Rustyboy rider@aol.com](mailto:Rustyboy rider@aol.com)**



**The Buddy pole project: June's meeting;  
In photos:**

**Michael Favor, Scott Petersen, John  
Post, Tom Rider;  
Don Stanton, Anna Horn;  
Michael Favor; Raymond Foulks, Jim  
Weir, Evelyn Weir,  
Michael (again) and last—in  
bottom photo,  
Stephen Wolske, Lester Mikeworth,  
Bessie Mikeworth.**

**An interesting and enjoyable project.**





Klaus Keil-KG6DTE



Tom Rider -W6JS

Michael  
Favor  
N6FAV



Larry Marcum  
KA6GND





Robert Lasso-W6RQR



Dale Anderson-KK6EVX



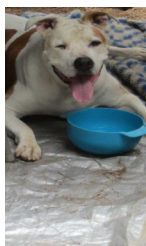
Scott Petersen-KE6VUS

& Solar



Dave Berman-W6PS

Kathy Favor -K6FAV



## **Battery-Back-Up Power for Amateur Radio**

Stephen McDermott-W6AKF

These days of instant communications, we seem to rely on our cordless and cell phones, HTs and mobile rigs for our communications needs. One item we always seem to forget right as an emergency happens, are batteries. When the lights go out, the chargers we use to charge our HTs and cell phones no longer function.

Depending upon how sever the outage is, the cells and landlines might be dead also. You can't remember the last time you recharged your batteries for your HT, so it's operating time is unknown. So there you are sitting in your dark cold house, the lights and phones are dead, the flashlights just barely work, and you can't communicate with other hams in your community or the outside world because your ham station is dead too. Your dead in the water without oars.

Virtually all-modern amateur gear is designed to operate on 12 volts, making operation possible from highly reliable, heavy-duty batteries. Yet, battery backup is under appreciated and underutilized by amateurs probably because of a lack of familiarity and the supposed difficulty or expense of obtaining suitable batteries.

As useful and versatile as batteries are, building a battery back-up system requires a little care and planning. Many hams believe their HT's are a good battery back up for when the power goes out. Not so. HT's are notoriously unreliable into repeaters, and have very low output, and have marginal antennas. Some even think that an old automobile battery with a dubious history, stuck under the operating desk with constitutes a battery back up for their ham station. Well, not exactly.

### **What Is a Battery?**

We all know what a battery is.... it's that thing that goes dead in your wonderful electronic devices when you least expect it! Actually, there's a little more to it than that, so perhaps a review of battery basics is in order here.

A battery is an electrical storage device. Batteries do not make electricity; they store it, just as a water tank stores water for future use.

As chemicals in the battery change, electrical energy is stored or released. In rechargeable batteries this process can be repeated many times. Batteries are not 100% efficient --- some energy is lost as heat and chemical reactions when charging and

discharging. The most efficient batteries are slow charging, slow discharging. Batteries are divided in two ways, by application (what they are used for) and construction (how they are built). The three major applications are **automotive**, **marine** and **deep-cycle** and all are flooded cell batteries. Selecting the correct batteries is all about lifespan. Its lifespan will vary considerably with how it is used, how it is maintained and charged, temperature, and other factors.

**Automotive**, or starting batteries; are normally used to start and run engines. Engine starters need a very large starting current for a very short time. Starting batteries have a large number of thin plates for maximum surface area. The plates are composed of lead "sponge", similar in appearance to a very fine foam sponge. This gives a very large surface area, but if deep cycled, this sponge will quickly be damaged and will fall to the bottom of the cells.

**Marine Batteries**, many are actually "hybrid", and fall between the starting and deep-cycle, while a few are true deep cycle. In the hybrid, the plates may be composed of lead sponge, but it is coarser and heavier than that used in starting batteries. It is often hard to tell what you are getting in a "marine" battery, but most are a hybrid. "Hybrid" types should not be discharged more than 50%.

**Deep Cycle Batteries** are designed to be discharged down as much as 80% repeatedly, and have much thicker plates. The major difference between a true deep cycle battery and others is that the plates are solid lead plates --- not sponge. Unfortunately, it is often impossible to tell what kind of battery you are really buying in some of the discount stores or places that specialize in automotive batteries.

There are two sizes, which will work very well for ham radio application, Group 24, and Group 27. These are the same groups that you might have in your car or truck. Group 24 will provide between 70-85 amp hour capacity, Group 27 between 85-105.

Deep cycle batteries are rated in Amp/Hours. Amp/Hour rating of a battery capacity is calculated by multiplying the current (in amperes) by time (in hours) the current is drawn. This rating will vary from battery manufacturers. For example:

**A battery which can deliver 4 amperes for 20 hours before being discharged would have an 80 amp-hour battery rating (4 X 20= 80).**

### **Selecting the Right Battery**

If you plan to have a 2-meter rig on the air, a single deep cycle battery (Group 24) should suffice. Adding more radios might stretch the capability of that single battery; you would be better off incorporating two 24's. The batteries should all be from the same group, and the same age; a new battery



connected to an older battery will soon be drawn down to the level of the older battery and therefore won't last as long. Maintenance free are flooded cell batteries, they are simply a standard flooded cell battery with sealed cells. Personally, I like to look inside to check the fluid levels every now and then.

If you chose to use automotive batteries, you will have to add some extra hardware. Automotive batteries come with standard battery posts or side mounts. These mounts make it difficult to attach wires to, so what you will need are two "marine terminals."

You can get these at any battery store, and fit over the standard posts (top mount) of the automotive battery and have a 3/8 inch threaded stud with wing nut attached; the newer deep cycle batteries will have both fittings.

Avoid the "side mount" batteries, for your system, you'll need extra hardware to convert to the marine type posts, and you may have trouble getting them to fit in the standard battery box's if you plan to use plastic battery box's.

### **Decisions and Everything in its Place**

As with everything you have in your house, it would be a good idea to find a good place in your shack where are you going to put the batteries. If you have your shack in the garage, no problem; they can go any where with out a concerned look from your wife, girl friend or significant other.

If it's in the house, there are some precautions you must undertake before you start this project.

Your shack may be your *cave*, but it's in *her* house. Fine a place where the battery(s) will fit and be out of the way and accessible so you can check the fluid levels.

I suggest placing your battery(s) in plastic marine battery boxes; this will look nicer than the naked batteries sitting on *her* carpet or hardwood floors and will show her that you were concerned about taking every safety precaution that you could think of. You'll score points here on safety and appearance issues.

### **Wiring It Up**

I suggest using Red/Black Zip Cord. The reason for this is simple: You cannot be confused which is the positive and the negative. If you use regular brown lamp zip cord, you might get them confused and it might lead to fried wires or even a fire if you connect them to the wrong terminals.

I use the 12 gauge Red/Black Zip Cord\* this would be your best bet for your VHF/UHF and HF operation. It's made of 65/30 stranded copper wires and rated at 20 amps. I also suggest using the Red/Black Anderson Powerpole 30Amp\* connector to connect your rig and batteries. They are genderless, easy to put together, the contact pins can be either crimped or soldered. The red/black color combination is the best connector I have found for DC operation. The Butte/Glenn ARES adopted this connector and wire as their standard DC power connector. The next step you will be doing is wiring all the batteries together. This is not as difficult as you might think it is. To make this job neat and clean you will need some 10-12-ring terminals \*\*. The 12 gauge will fit this terminal and I suggest you solder the wire to the terminal. These terminals come with a coating protecting the copper. Scrape the coating off so you expose the bare copper; it will make soldering much easier.

Depending how many batteries you have, you'll need 4 to connect 2 batteries, 2 for the charger, 2 for each radio you plan to use. Make sure your wiring harness between the batteries is long enough so the tops of the battery boxes will fit on the battery box.

Check your wiring with a VOM to make sure soldering and connections are good before you attach it to your batteries.

**You will want to wire up all your batteries in PARALLEL. Connect the positive (red) wire of one battery to the positive of the second battery. Do the same with the negative (black) wire, negative to negative.**

This will give you 12 volts, and the current rating total of all the batteries you have connected together, so if you have 2 Group 24 batteries rated at 130 Amp/Hrs; you'll have 260 Amp/Hrs at 12 volts. Again, check your voltage before you connect them to your radios.

### **Maintaining and Charging your Batteries**

In order to get the most from your battery back up system, you can't just forget them now and expect them to work for you forever. It is very important to take good care of them treat them right. You must keep an eye on the electrolyte level in the batteries. Low electrolyte levels cause most premature failures. Electrolyte is lost whenever the batteries are charged and also discharged heavily. You should check the level in each cell of your batteries on a regular basis and keep the fluid above the plates. I recommend at least once a month, more often depending on usage and how you charge them.



To replenish the electrolyte, add **distilled water** as required. I suggest using a turkey baster to add the distilled water. Never add acid. Do not use tap water! It contains chemical and mineral impurities and will kill your batteries prematurely. In order to keep your batteries in working order, you have got to keep them charged. A Battery Maintainer with a 1.5 to 2.0-amp charge rate should be adequate. The battery maintainer will charge the battery when it gets low, charge them to around 13.8, and then shut off. Most of these have indicator lights (green and red) tell you when the battery(s) are charged. To make sure your batteries are charged every day, use automatic on/off timer.

### **To Full Charge**

The battery back up system and hard ware I have described to you in this article has been in use for emergency power for part of my station for about 10 years.

I keep one 2 meter radio connected to these two batteries as my emergency power system. The two deep cycle batteries have provided excellent service and I highly recommend them for battery back up for application for amateur radio.

Some of the items I have mentioned can be obtained locally, the Anderson Powerpoles and 12 gauge Red/Black cable can be purchased from Powerwerx\*. I suggest purchasing your deep cycle batteries from a vendor who specializes in batteries and accessories. Batteries + Plus has a discount for GEARS members.

You'll get professional advice from people who know their products and can answer any questions you have. A battery back up power system may be just what you need to keep your station going when emergencies arise and the commercial power fails

Stephen

W6AKF

\* Powerwerx.com

\*\* Home Depot or OSH



**VOLUNTEER EXAMINER COORDINATOR**

The GEARS VEC Committee is a group of volunteer examiners who are authorized by the FCC to provide examinations for amateur radio licenses. The exams are given six times a year at the Butte County Search & Rescue at 3898 Morrow Lane in Chico. The cost of the exam is \$6.50 you can take more than one exam for the same cost. The exam sessions start at 2:00 PM. Walk-ins accepted.

**GEARS VEC EXAMINATIONS FOR 2015.**

**August 2nd -- October 4th -- December 6th**

**The current General Class Question Pool will expire on June 30th 2015.**

**What to bring to the test session:**

Two forms of identification. One must be a recognizable photo, current driver's license, state ID card, school ID, passport. If applicable, an unexpired Certificate of Successful Completion Examination (CSCE), the CSCE are valid for one year from the date of issue. A #2 pencil and a **black ink pen**. You may bring a calculator, however memories must be cleared before the exam session starts. If you are upgrading, bring a photocopy of your license.

**When you pass your exam.**

The GEARS VEC is an FCC VEC. When candidates pass their exam the results go directly to the FCC. New licensees will know their new call sign by Tuesday or Wednesday from a call from the GEARS VEC. You will be given an instruction sheet on to check your FCC Registration Number (FRN). How to register on to the FCC Universal Licensing System (ULS). How to obtain your official copy of your license.

**Question Pool Schedule.**

**Technician: July 1st 2014 is valid until June 30th 2018.**

**General: July 1st 2011 is valid until June 30th 2015.**

**Extra : July 1st 2012 is valid until June 30, 2016.**

**NCVEC Form 605**

This form is to be used for new license applications, upgrades, license renewals, address change and systematic call sign changes. Submit this form to the GEARS VEC. **Do not send this form to the FCC.**

**GEARS VEC**

**Tom Rider W6JS**

**myw6js@gmail.com**

**(530) 893-9211**

**This article from GEARS web site: courtesy webmaster Stephen McDermott W6AKF**



**The GEARS Newsletter Staff:****Editor and Publisher**.....Dorothy Post**Printing & Distribution** snail mail: Evelyn Weir**Website**...Stephen McDermott W6AKF

The Radiator is a monthly publication of the Golden Empire Amateur Radio Society (GEARS). It is the policy of the Editor to publish all material submitted by the membership provided such material is in good taste, relevant to amateur radio, of interest to GEARS members, and space is available. Please send all submissions to the Editor – Dorothy Post by the last day of the month through the following medium: E-mail: dj@posthouse.us

**Club Officers: (Board of Directors)**

President .....Anna Horn –KG6ZOA

Vice President..... Scott Petersen-KE6VUS

Secretary .....Dale Anderson-KK6EVX

Treasurer.....Rick Hubbard-KI6VOS

Past President .....Gene Wright-WA6ZRT

Director..... Tom Rider-W6JS

Director.....Stephen McDermott W6AKF

Director.....Stephen Wolske-KF6HSS

**Club Meetings****General Meeting Third Friday 7:00 PM****Board Meeting Third Friday 6:00 PM****GEARS Club Net****Tuesdays 8:00 PM 146.850 MHz-PL 110.9****GARS Club Net: Monday, 19:30 147.105+Mhz PL 110.0****Sacramento Valley Traffic Net****Nightly 9:00 PM 146.850 MHz-PL 110.9****ARES Nets:****Butte Mondays 20:00 146.850 MHz-PL 110.9****Yuba Sutter Thursdays 19:00 146.085+MHz PL 127.3****Glenn Thursday 19:30 147.105 MHz +PL 100.0****Other Nets:****Sac Valley Section Net—7:00 PM 2nd Wed of the month 146.085 MHz+PL 127.3****440 Wed. Night 8:00 PM Wednesday 440.650 MHz****Golden Bear 7:00 PM Daily 3975 kHz****Willie Net 8:00 PM Mondays 1930 kHz****Western Public Service System (WPSS)****Winter 5:00 – 7:30 PM 3952 kHz****Summer 6:00 – 8:30 PM 3952 kHz****ARISS (International Space Station) Uplink 144.490 MHz Downlink 145.800 MHz****Hope-1 satellite: all uplinks are in 145Mhz band:****All downlinks are in 435Mhz band****...California Traffic Net: 3906 KHz nightly @6:00 pm****For traffic listing & @6:30 p.m. for roll call.****HamShield turns an Arduino****Into a VHF/UHF transceiver****By Dan Romanchik, KB6NU**

The Arduino seems to be making a big splash in ham radio circles these days. The ARRL has recently published a couple of books about the Arduino and Arduino-based amateur radio projects. And, recently, I purchased a NanoKeyer (nanokeyer.wordpress.com), which is a CW keyer powered by an Arduino Nano.

Now, a couple of enterprising young hams have built the HamShield (<https://www.kickstarter.com/projects/749835103/hamshield-for-arduino-vhf-uhf-transceiver>). It's an Arduino shield that turns an Arduino into a VHF/UHF transceiver. With the HamShield, you can transmit and receive on the 2 m, 220 MHz, and 440 MHz bands.

According to Casey, KC7IBT, one of the project leaders, "We have both voice and data working on the shield right now and also have a powerful library to control it."

"We also have it talking to the Chrome browser, so any computer that can run a web browser can operate a packet radio station or voice station. We also have another piece of chrome software called "APRS Messenger", a text messaging app for APRS. One of our prototypes is in a neat little case that clips right to the back of your laptop (shown in the video). I will launch these apps in the Chrome Store once we get closer to completion.

"We have 10 working prototypes currently, but need to raise money to fund the production cost and get the unit prices down to acceptable levels. This means buying parts in bulk and reducing production costs."

I think this is a very cool project, and I hope that you'll consider supporting the HamShield Kickstarter project. I plan to get one and see what I can do with it.

<b>Sunday, August 3, 2015 October 4, 2015 December 6, 2015</b>	<b>2:00 p.m.</b>	<b>VEC—Exams</b>	<b>Butte Co. Search &amp; Rescue Building 2591 Morrow Lane, Chico</b>	<b>Tom Rider</b>
<b>Wednesday July 8, 2015</b>	<b>Board-6:30 p.m. General Meeting 7:00 .</b>	<b>GARS-Glenn Glenn Amateur Radio Society General Meeting, &amp; Amateur Radio Emergency Services</b>	<b>Lutheran Church Hall: 565 Main Street Artois</b>	<b>Albert Leyva</b>
<b>Friday, July 10, 2015</b>		<b>OARS Oroville Amateur Radio Society General Meeting</b>	<b>St Paul's Church Parrish Hall 1430 Pine Street Oroville</b>	<b>John Hunt 530 589 4734</b>
<b>Friday July 17, 2015</b>	<b>Board-6:00 p.m. General Meeting 7:00 Doors open 5:30 p.m. .</b>	<b>GEARS Golden Empire Amateur Radio Society General Meeting/Elections</b>	<b>Butte County Search and Rescue Building 2591 Morrow Lane Chico</b>	<b>Anna Horn -kg6zoa 530-877-5939</b>

